Power injectors put I.V. lines under pressure

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DURING A COMPUTED tomography (CT) scan, a power injector was used to administer contrast media into a patient's I.V. access site. Contrast media suddenly sprayed out of the I.V. administration set connector and into her face and eyes. Although the patient was wearing glasses, she complained that her eyes were burning, so her eyes were rinsed with water for 15 minutes.

After the I.V. tubing was replaced, her CT scan was completed without further mishap. Fortunately, a subsequent ophthalmic exam in the ED didn't show any eye or skin injury and the patient was reassured.

What went wrong?

In this particular situation, the I.V. tubing connector failed because it wasn't designed to withstand the pressures of contrast media injection using a power injector.

Power injectors are used to inject radiopaque contrast media at controlled rates during diagnostic studies to enhance the diagnostic image. The normal peak pressures produced by a power injector during a &agnostic scan can exceed the pressure tolerance, or pounds per square inch, of conventional I.V. administrationsets or smaller-caliber I.V. catheters, which aren't designed to handle the high pressures. Rupture of the tubing or the catheter can result in:

- sprays of blood and contrast media
- loss of venous access, requiring more attempts to restart I.V. lines
- fragmentation of catheters with or without embolization, possibly requiring surgery to remove fragments
- patient discomfort and anxiety
- delay of testing or treatment
- waste of contrast media.

Preventing problems

Manufacturers of power injectors recommend using catheters, tubing, and connectors labeled for use with power injectors; these can withstand the higher pressures. Follow these guidelines:

- When using a peripheral access site, select a flexible, 20-gauge or larger-caliber I.V. catheter. Verify that the catheter, tubing, and connectors are rated for use with power injectors.
- Insert the catheter in a large peripheral vein, such as an antecubital or forearm vein, which can take the higher flow rate and pressure.

Before injecting the contrast media, make sure that the catheter is patent; for example, by ensuring that it provides rapid blood return. Check that the insertion site doesn't show any signs of infiltration.

Know the manufacturer's recommendations and your facility's protocols for the injection of contrast media using power injectors.

Monitor the patient for adverse reactions.

SELECTED REFERENCES

"A High-Prwure Situation: Conventional I.V. Sets Can Burst When Used with CT Contrast Media Injectors," Health Devices. 33(3):100-102, March 2004.

Manual on Contrast Media, 5.0 edition. Reston, Va., American College of Radiology, 2004.

Although you need to support the adverse event–reporting policy of your health care facility, you may voluntarily report a medical device that doesn't perform as intended by calling MedWatch at 1800-FDA-1088 (fax: 1-800-FDA-1078). The opinions and statements in this report are those of the authors and may not reflect the views of the Department of Health and Human Services. Beverly Alhrecht Gallauresi, RN, BS, MPH, is a nurse-consultant at the Center for Devices and Radiological Health at the Food and Drug Administration in Rockville, Md., and coordinates Device *Safety*.

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